CHAPTER 2

Current Emissions and Air Quality

Introduction

This chapter provides information on current emissions and air quality, on a statewide level. The following introductory information gives a national perspective on how California's air quality compares with that in other areas of the nation. Section B includes a summary table of the 1995 Statewide Emission Inventory. The table shows emissions data by four major source categories: stationary sources, area-wide sources, mobile sources, and natural sources. Section C provides more detailed information for the four major source categories in a table of the 1995 Statewide Emission Inventory by Summary Category. The remaining sections of this Chapter provide information on emissions (including the high emitting facilities) and air quality on a statewide basis. This information is organized by pollutant, for ozone, PM_{10}, and CO.

State and local agencies have implemented many control measures during the last three decades to improve air quality. As a result, there has been a steady decline in both emissions and pollutant concentrations. However, three pollutants — ozone, particulate matter, and carbon monoxide — still pose air quality problems. While existing control programs are expected to reduce CO concentrations to levels below the standards within a few years, it will be a significant challenge to reduce emissions sufficiently to attain the ozone and PM_{10} standards in all areas.

Figure 2-1 shows the maximum measured ozone concentrations for the top ten urban areas in the nation. Ozone concentrations in all these areas exceed the national 1-hour standard of 0.12 ppm. The graph includes only two California areas. Ten years ago, California areas would have been more apparent in this comparison, holding the top three spots and four of the top ten spots. However, as ozone concentrations in the State decline, California's air quality continues to improve relative to other areas of the nation.

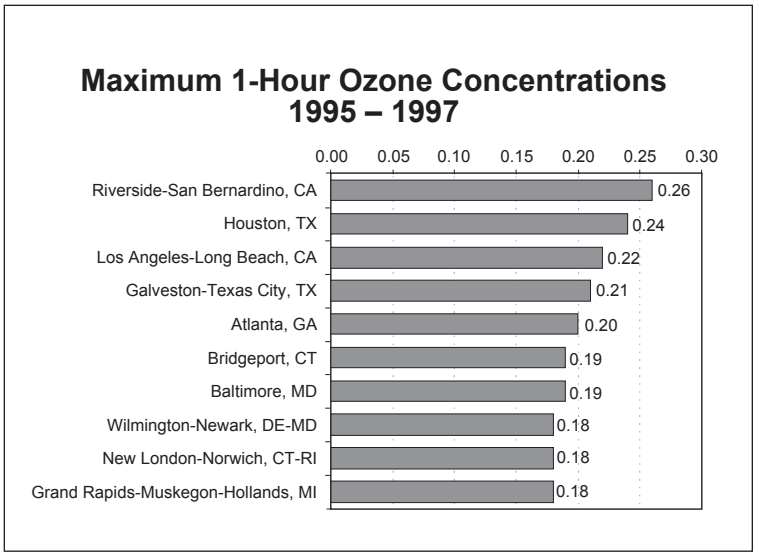

Figure 2-1

Attainment of the standards for particulate matter that is 10 microns and smaller (PM_{10}) is a significant problem. The PM_{10} problem is most prevalent in the western United States. Six western areas are classified as serious PM_{10} nonattainment areas. Four of these six areas — the Coachella Valley, the Owens Valley, the San Joaquin Valley, and the South Coast Air Basin — are located in California. Because of the complex nature of the particulate matter problem, it will be many years before the standards are attained.

Carbon monoxide poses much less of a problem. Figure 2-2 shows the top ten areas in the nation, based on the average number of days when the CO concentration was higher than the national 8-hour standard. The Los Angeles-Long Beach and Calexico areas rank first and second, and the average number of national standard exceedance days in these areas is at least five times higher than in any other area. However, as a result of the State's stringent motor vehicle emission standards and clean fuels programs, nine other California areas were redesignated as attainment for the national CO standards in 1998.

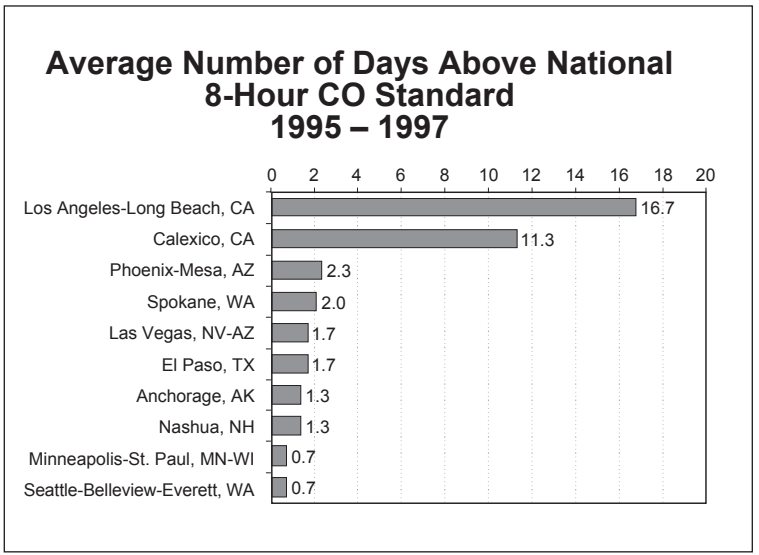

Figure 2-2

1995 Statewide Emission Inventory Summary

Division Major Category	Emissions (tons/day, annual average) TOG	ROG	CO	NO_x	SO_x	PM_{10}
Stationary Sources	2700	740	350	630	140	210
Fuel Combustion	150	35	290	530	50	34
Waste Disposal	1400	22	0	1	0	8
Cleaning and Surface Coatings	510	400	0	0		0
Petroleum Production and Marketing	510	220	7	21	60	3
Industrial Processes	85	64	56	80	27	170
Area-wide Sources	2000	780	2500	95	5	1900
Solvent Evaporation	520	480				
Miscellaneous Processes	1500	300	2500	95	5	1900
Mobile Sources	2200	2000	18000	2800	130	120
On-Road Motor Vehicles	1900	1700	15000	2100	56	67
Other Mobile Sources	340	320	2800	700	78	50
Natural Sources*	110	48	550	8		78
Total California	**7100**	**3600**	**22000**	**3500**	**270**	**2300**

Table 2-1

* Does not include biogenic sources.

1995 Statewide Emission Inventory by Summary Category

Division Major Category Summary Category	Emissions (tons/day, annual average)					
	TOG	ROG	CO	NO_X	SO_X	PM_{10}
Stationary Sources (division total)	**2686**	**735**	**348**	**633**	**138**	**211**
Fuel Combustion (major category total)	**154**	**35**	**285**	**531**	**50**	**34**
– Electric Utilities	28	6	36	69	8	5
– Cogeneration	9	2	36	36	2	3
– Oil and Gas Production (Combustion)	37	6	28	71	3	3
– Petroleum Refining (Combustion)	5	2	12	54	11	6
– Manufacturing and Industrial	44	8	79	167	16	9
– Food and Agricultural Processing	5	4	51	44	4	4
– Service and Commercial	25	7	32	84	7	5
– Other (Fuel Combustion)	2	1	12	6	0	1
Waste Disposal (major category total)	**1427**	**22**	**0**	**1**	**0**	**8**
– Landfills	1422	20	0	1	0	8
– Other (Waste Disposal)	5	2	0	0	0	0
Cleaning and Surface Coatings (major category total)	**509**	**396**	**0**	**0**	**0**	**0**
– Laundering	20	20	0	0	0	0
– Degreasing	191	127	0	0	0	0
– Coatings and Related Process Solvents (summary category total)	228	188	0	0	0	0
- Auto, Marine & Aircraft	*23*	*23*	*0*	*0*	*0*	*0*
- Paper & Fabric	*5*	*5*	*0*	*0*	*0*	*0*
- Metal, Wood & Plastic	*65*	*61*	*0*	*0*	*0*	*0*
- Other	*134*	*99*	*0*	*0*	*0*	*0*
– Printing	18	18	0	0	0	0
– Other (Cleaning and Surface Coatings)	52	43	0	0	0	0

Table 2-2

1995 Statewide Emission Inventory by Summary Category, continued

Division Major Category Summary Category	Emissions (tons/day, annual average)					
	TOG	ROG	CO	NO_x	SO_x	PM_{10}
Stationary Sources (continued)						
Petroleum Production and Marketing (major category total)	**512**	**218**	**7**	**21**	**60**	**3**
– Oil and Gas Production (except combustion)	213	99	1	3	0	0
– Petroleum Refining (except combustion)	49	37	6	19	60	3
– Petroleum Marketing (summary category total)	243	76	0	0	0	0
- Fuel Distribution Losses	*177*	*12*	*0*	*0*	*0*	*0*
- Fuel Storage Losses	*4*	*4*	*0*	*0*	*0*	*0*
- Vehicle Refueling	*48*	*48*	*0*	*0*	*0*	*0*
- Other	*14*	*12*	*0*	*0*	*0*	*0*
– Other (Petroleum Production & Marketing)	7	6	0	0	0	0
Industrial Processes (major category total)	**85**	**64**	**56**	**80**	**27**	**165**
– Chemical	30	23	0	3	7	5
– Food and Agriculture (except combustion)	23	19	2	10	1	15
– Mineral Processes	5	3	18	45	11	37
– Metal Processes	1	1	0	0	0	2
– Wood and Paper	3	2	1	3	1	16
– Glass and Related Products	0	0	0	16	6	2
– Electronics	0	0	0	0	0	0
– Other (Industrial Processes)	24	16	33	4	1	89

Table 2-2 (continued)

1995 Statewide Emission Inventory by Summary Category, continued

Division Major Category Summary Category	Emissions (tons/day, annual average)					
	TOG	ROG	CO	NO_x	SO_x	PM_{10}
Area-wide Sources (division total)	**2042**	**778**	**2529**	**95**	**5**	**1881**
Solvent Evaporation (major category total)	**518**	**481**	**0**	**0**	**0**	**0**
– Consumer Products	252	228	0	0	0	0
– Architectural Coatings and Related Process Solvents (summary category total)	136	126	0	0	0	0
- Architectural Coatings	*117*	*113*	*0*	*0*	*0*	*0*
- Thinning and Cleanup Solvents	*19*	*13*	*0*	*0*	*0*	*0*
– Pesticides/Fertilizers (summary category total)	102	100	0	0	0	0
- Farm Use	*84*	*84*	*0*	*0*	*0*	*0*
- Home Use	*14*	*13*	*0*	*0*	*0*	*0*
- Commercial Use	*5*	*4*	*0*	*0*	*0*	*0*
– Asphalt Paving	26	26	0	0	0	0
– Refrigerants	0	0	0	0	0	0
– Other (Solvent Evaporation)	2	1	0	0	0	0
Miscellaneous Processes (major category total)	**1524**	**297**	**2529**	**95**	**5**	**1881**
– Residential Fuel Combustion (summary category total)	137	57	918	83	5	129
- Wood Combustion	*131*	*54*	*898*	*11*	*2*	*125*
- Cooking and Space Heating	*5*	*2*	*18*	*64*	*3*	*4*
- Other	*1*	*0*	*2*	*8*	*0*	*0*
– Farming Operations (summary category total)	1180	94	0	0	0	218
- Tilling, Harvesting & Growing	*0*	*0*	*0*	*0*	*0*	*174*
- Livestock	*1180*	*94*	*0*	*0*	*0*	*44*
– Construction and Demolition (summary category total)	0	0	0	0	0	184
- Building	*0*	*0*	*0*	*0*	*0*	*92*
- Road Construction Dust	*0*	*0*	*0*	*0*	*0*	*92*

Table 2-2 (continued)

1995 Statewide Emission Inventory by Summary Category, continued

Division Major Category Summary Category	Emissions (tons/day, annual average) TOG	ROG	CO	NO_x	SO_x	PM_{10}
Area-wide Sources (continued)						
Miscellaneous Processes (continued)						
– Paved Road Dust	0	0	0	0	0	399
– Unpaved Road Dust	0	0	0	0	0	580
– Fugitive Windblown Dust (summary category total)	0	0	0	0	0	244
- Farm Lands	*0*	*0*	*0*	*0*	*0*	*186*
- Pasture Lands	*0*	*0*	*0*	*0*	*0*	*14*
- Unpaved Roads	*0*	*0*	*0*	*0*	*0*	*43*
– Fires (Structural and Automotive)	2	1	18	0	0	2
– Waste Burning and Disposal (summary category total)	116	62	1043	9	1	95
- Agricultural Burning	*53*	*29*	*334*	*4*	*0*	*37*
- Non-Agricultural	*63*	*32*	*707*	*3*	*0*	*56*
- Other	*1*	*1*	*2*	*1*	*0*	*1*
– Utility Equipment (summary category total)	78	75	549	2	0	2
- Lawn & Garden - Residential	*17*	*16*	*143*	*1*	*0*	*0*
- Lawn & Garden - Commercial	*61*	*59*	*406*	*2*	*0*	*1*
– Other (Miscellaneous Processes) (summary category total)	11	8	1	0	0	30
- Cooking	*10*	*7*	*0*	*0*	*0*	*28*
- Other	*1*	*1*	*1*	*0*	*0*	*2*

Table 2-2 (continued)

1995 Statewide Emission Inventory by Summary Category, continued

Division Major Category Summary Category	Emissions (tons/day, annual average) TOG	ROG	CO	NO_x	SO_x	PM_{10}
Mobile Sources (division category total)	**2198**	**1973**	**18256**	**2776**	**133**	**116**
On-Road Motor Vehicles (major category total)	1858	1652	15461	2081	56	67
– Light Duty Passenger (summary category total)	1129	1006	9415	812	19	15
- Non-Evaporative	*803*	*680*	*9404*	*804*	*18*	*13*
- Evaporative	*324*	*324*	*0*	*0*	*0*	*0*
- Diesel	*2*	*2*	*11*	*7*	*1*	*2*
– Light Duty Trucks (summary category total)	547	480	4719	545	9	7
- Non-Evaporative	*421*	*354*	*4714*	*542*	*9*	*6*
- Evaporative	*125*	*125*	*0*	*0*	*0*	*0*
- Diesel	*1*	*1*	*5*	*4*	*0*	*1*
– Medium Duty Trucks (summary category total)	70	60	425	80	1	1
- Non-Evaporative	*60*	*50*	*425*	*80*	*1*	*1*
- Evaporative	*11*	*11*	*0*	*0*	*0*	*0*
– Light Heavy Duty Gas Trucks (summary category total)	26	23	363	109	3	3
- Non-Evaporative	*19*	*16*	*363*	*109*	*3*	*3*
- Evaporative	*7*	*7*	*0*	*0*	*0*	*0*
– Medium Heavy Duty Gas Trucks (summary category total)	12	11	199	34	1	1
- Non-Evaporative	*9*	*8*	*199*	*34*	*1*	*1*
- Evaporative	*4*	*4*	*0*	*0*	*0*	*0*
– Light Heavy Duty Diesel Trucks	6	6	32	43	4	4
– Medium Heavy Duty Diesel Trucks	14	14	68	97	6	9
– Heavy Heavy Duty Diesel Trucks	42	40	192	338	13	28
– Motorcycles	11	10	48	5	0	0
– Heavy Duty Diesel Urban Buses	2	2	2	18	1	0

Table 2-2 (continued)

1995 Statewide Emission Inventory by Summary Category, continued

Division Major Category Summary Category	Emissions (tons/day, annual average) TOG	ROG	CO	NO_x	SO_x	PM_{10}
Mobile Sources (continued)						
Other Mobile Sources (major category total)	**340**	**321**	**2795**	**695**	**78**	**50**
– Aircraft	69	60	321	48	4	13
– Trains	8	7	23	149	7	3
– Ships and Commercial Boats	9	9	14	75	52	9
– Recreational Boats*	99	95	509	10	0	4
– Off-road Recreational Vehicles (summary category total)*	67	65	259	5	0	0
- Snowmobiles	*42*	*40*	*114*	*2*	*0*	*0*
- Motorcycles	*12*	*12*	*61*	*1*	*0*	*0*
- All-Terrain Vehicles (ATVs)	*10*	*10*	*53*	*0*	*0*	*0*
- Four-Wheel Drive Vehicles	*3*	*3*	*30*	*2*	*0*	*0*
– Commercial/Industrial Mobile Equipment*	74	71	1437	316	9	15
– Farm Equipment*	16	15	232	93	5	5
Natural (Non-Anthropogenic) Sources (division total)	**106**	**48**	**550**	**8**	**0**	**78**
Natural Sources (major category total)**	**106**	**48**	**550**	**8**	**0**	**78**
– Geogenic Sources	52	18	0	0	0	0
– Wildfires	54	30	550	8	0	78
Total Statewide - All Sources	**7032**	**3534**	**21684**	**3511**	**277**	**2286**

Table 2-2 (continued)

* Updated emission estimates are being used to support an upcoming Air Resources Board regulatory hearing. When the new emission estimates are approved by the Board they will be included in subsequent editions of the almanac.

** Does not include biogenics.

Ozone

1995 Statewide Emissions Inventory – Ozone Precursors by Category

NO_x Sources – Statewide

NO_x is a group of gaseous compounds of nitrogen and oxygen, many of which contribute to the formation of ozone, PM_{10} and $PM_{2.5}$. Most NO_x emissions are produced by the combustion of fuels. Industrial sources report NO_x emissions to local air districts and to the Air Resources Board. Other sources of NO_x emissions are estimated by the local air districts and the ARB. Mobile sources (including on-road and other) make up over 75 percent of the total statewide NO_x emissions. The category of other mobile sources includes emissions from aircraft, trains, ships, recreational boats, farm equipment, off-road recreational vehicles, and other equipment. Stationary sources of NO_x include both internal and external combustion processes in industries such as manufacturing, food processing, electric utilities, and petroleum refining. Area-wide sources, which include residential fuel combustion, waste burning and fires, contribute only a small portion of the total NO_x emissions.

NO_x Emissions (annual average)		
Emissions Source	tons/day	Percent
Stationary Sources	633	18%
Area-wide Sources	95	3%
On-Road Mobile	2081	59%
Gasoline Vehicles	1574	45%
Diesel Vehicles	507	14%
Other Mobile Sources	695	20%
Total Statewide	**3504**	**100%**

Table 2-3

ROG Sources – Statewide

Reactive organic gases (ROG) are volatile organic compounds that are photochemically reactive and contribute to the formation of ozone as well as PM_{10} and $PM_{2.5}$. These emissions result primarily from incomplete fuel combustion and the evaporation of chemical solvents and fuels. On-road mobile sources are the largest contributors to statewide ROG emissions. This category includes emissions from cars, trucks, and motorcycles powered by gasoline and diesel fuels. Stationary sources of ROG emissions include processes that use solvents (such as dry cleaning, degreasing, and coating operations) and petroleum-related processes (such as petroleum refining and oil and gas extraction). Area-wide ROG sources include consumer products, pesticides, coatings, and other evaporative emissions.

ROG Emissions (annual average)

Emissions Source	tons/day	Percent
Stationary Sources	735	21%
Area-wide Sources	779	22%
On-Road Mobile	1652	47%
Gasoline Vehicles	1588	46%
Diesel Vehicles	64	2%
Other Mobile Sources	321	9%
Total Statewide	**3487**	**100%**

Table 2-4

Largest Stationary Sources Statewide

Largest Stationary Sources of NO_x Statewide

Air Basin	Facility Name	City	NO_x (tons/year)
San Francisco Bay Area	Shell Martinez Refining Company	Martinez	4447
Mojave Desert	Southdown (Cement)	Apple Valley	4106
North Central Coast	P G & E	Moss Landing	4037
San Francisco Bay Area	Chevron Inc.	Richmond	3612
Mojave Desert	Riverside Cement Company	Oro Grande	3361
San Francisco Bay Area	Tosco Corp. Avon Refinery	Martinez	3161
San Francisco Bay Area	Exxon Corporation	Benecia	3078
South Coast	Chevron USA Inc.	El Segundo	2587
South Coast	California Portland Cement Co.	Colton	2289
Mojave Desert	California Portland Cement Co.	Mojave	2246

Table 2-5

1. Facility totals are for calendar year 1995. Some facilities may have reduced or increased emissions since 1995. These changes will be reflected in subsequent almanacs.

2. The lists of facilities do not include military bases, landfills, or airports.

Largest Stationary Sources of ROG Statewide

Air Basin	Facility Name	City	**ROG** (tons/year)
San Francisco Bay Area	Tosco Corp. Avon Refinery	Martinez	3017
San Francisco Bay Area	Chevron Inc.	Richmond	2894
San Francisco Bay Area	Shell Martinez Refining Company	Martinez	1472
San Diego	Kelco-Div Merck & Co. (Pharmaceuticals)	San Diego	1225
South Coast	Arco Products Co.	Carson	1018
San Francisco Bay Area	New United Motor Manufacturing	Fremont	946
San Francisco Bay Area	Exxon Corporation	Benicia	812
San Joaquin Valley	Texaco Refining and Marketing	Bakersfield	786
South Coast	Chevron USA Inc	El Segundo	731
San Joaquin Valley	Naval Petroleum Reserve No. 1	Shafter	723

Table 2-6

1. Facility totals are for calendar year 1995. Some facilities may have reduced or increased emissions since 1995. These changes will be reflected in subsequent almanacs.

2. The lists of facilities do not include military bases, landfills, or airports.

Ozone – 1997 Air Quality

Air quality as it relates to ozone has improved greatly in California over the last several decades, and 1997 was one of the cleanest years on record. However, despite aggressive emission controls, peak ozone values still exceed the State standard in 11 of the 15 air basins. Peak values exceed the national 1-hour standard in nine air basins. California's highest ozone concentrations occur in the South Coast Air Basin, where the peak 1-hour value is more than two and a half times the level of the State standard.

Ozone concentrations are generally lower near the coast than they are inland, and rural areas tend to be cleaner than urban areas. This can be explained in part by the characteristics of ozone, including pollutant reactivity, transport, and deposition. Based on current ozone concentrations, substantial additional emission control measures will be needed to attain the standards throughout the State.

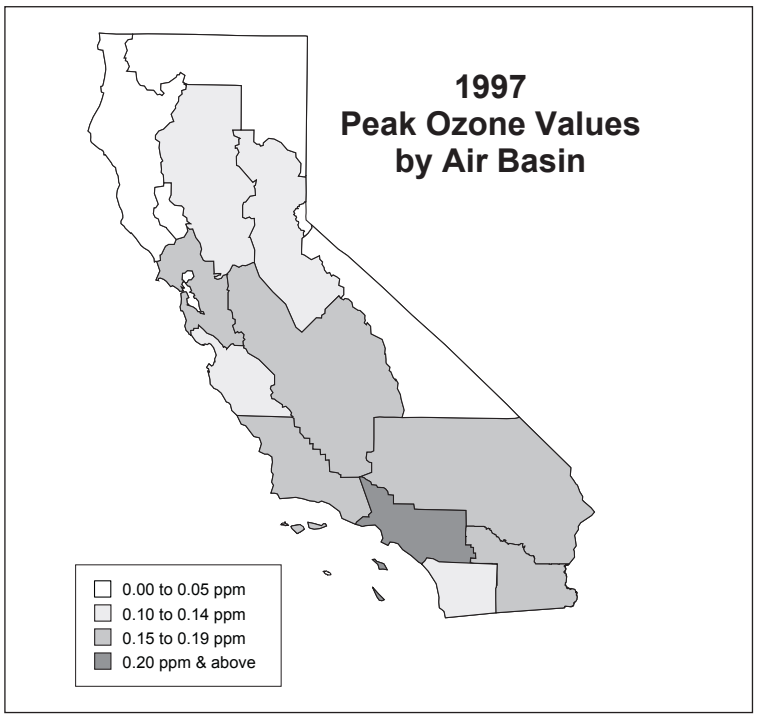

Figure 2-3

Ozone – 1997 Air Quality Tables

Maximum Peak 1-Hour Indicator by Air Basin

Air Basin	1997 Maximum Peak 1-Hour Indicator in Parts per Million	Number of Days in 1997 Above State Standard	Number of Days in 1997 Above National Standard
Great Basin Valleys Air Basin	0.10	0	0
Lake County Air Basin	0.08	0	0
Lake Tahoe Air Basin	0.08	1	0
Mojave Desert Air Basin	0.17	101	22
Mountain Counties Air Basin	0.14	29	2
North Central Coast Air Basin	0.11	1	0
North Coast Air Basin	0.09	2	0
Northeast Plateau Air Basin	0.07	0	0
Sacramento Valley Air Basin	0.14	25	3
Salton Sea Air Basin	0.16	91	13
San Diego Air Basin	0.13	43	1
San Francisco Bay Area Air Basin	0.15	8	0
San Joaquin Valley Air Basin	0.17	110	16
South Central Coast Air Basin	0.15	59	3
South Coast Air Basin	0.23	144	64

Table 2-7

Table 2-8

High Ozone Concentration Sites in Each Air Basin

Great Basin Valleys
- Death Valley National Monument

Lake County
- Lakeport – Lakeport Blvd

Lake Tahoe
- South Lake Tahoe – Sandy Way

Mountain Counties
- Cool – Highway 193
- Placerville – Gold Nugget Way
- San Andreas – Gold Strike Road
- Jackson – Clinton Road
- Grass Valley – Litton Building

Mojave Desert
- Phelan – Beekley Road & Phelan Road
- Victorville – Armagosa Road
- Joshua Tree – National Monument
- Hesperia – Olive Street
- Lancaster – W Pondera Street

North Central Coast
- Pinnacles National Monument
- Hollister – Fairview Road
- Scotts Valley – Scotts Valley Drive
- King City – 750 Metz Road
- Carmel Valley – Ford Road

North Coast
- Healdburg – Municipal Airport
- Ukiah – E Gobbi Street

Northeast Plateau
- Yreka – Foothill Drive

Sacramento Valley
- Sacramento – Del Paso Manor
- Rocklin – Rocklin Road
- Roseville – N Sunrise Blvd
- Auburn – Dewitt-C Avenue
- North Highlands – Blackfoot Way

Salton Sea
- Calexico – Ethel Street
- Calexico – Grant Street
- Palm Springs – Fire Station
- El Centro – 9th Street
- Calexico – East

San Diego
- Alpine – Victoria Drive
- El Cajon – Redwood Avenue
- Camp Pendleton
- Otay Mesa – Paseo International
- San Diego – Overland Avenue

San Francisco Bay Area
- Livermore – Old 1st Street
- San Jose – 935 Piedmont Road
- Los Gatos
- Concord – 2975 Treat Blvd
- San Martin – Murphy Avenue

San Joaquin Valley
- Edison
- Fresno – 1st Street
- Parlier
- Clovis – N Villa Avenue
- Arvin – Bear Mountain Blvd

South Central Coast
- Simi Valley – Cochran Street
- Thousand Oaks – Moorpark Road
- Ventura County – W Casitas Pass Road
- Ojai – Ojai Avenue
- Las Flores Canyon #1

South Coast
- Glendora – Laurel
- Upland
- Azusa
- Lake Gregory
- Fontana – Arrow Highway

Sites with the highest ozone values, listed in descending order of their peak 1-hour indicator value. The peak value at each site may not exceed the standard. For air basins with five or fewer sites, all sites are listed.

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PM_{10}
1995 Statewide Emissions Inventory – Directly Emitted PM_{10} by Category

The PM_{10} emission inventory includes only directly emitted particulate emissions. However, particulate matter can also be formed in the atmosphere. This secondary PM_{10} is formed by reactions that are driven by emissions of ROG, NO_x, and SO_x. Area-wide sources account for most of the statewide emissions of directly emitted PM_{10}. The major area-wide source of PM_{10} is fugitive dust, especially dust from unpaved roads and agricultural operations. Fugitive dust emissions from unpaved roads are related to motor vehicle population levels due to vehicular travel on unpaved roads. Other sources of PM_{10} emissions include brake and tire wear, residential wood burning, and industrial sources. Exhaust emissions from mobile sources contribute only a very small portion of directly emitted PM_{10} emissions, but are a major source of the ROG and NO_x that form secondary particles.

PM_{10} Emissions (annual average)		
Emissions Source	tons/day	Percent
Stationary Sources	211	10%
Area-wide Sources	1881	85%
On-Road Mobile	67	3%
Gasoline Vehicles	23	1%
Diesel Vehicles	44	2%
Other Mobile Sources	50	2%
Total Statewide	**2208**	**100%**

Table 2-9

Largest Stationary Sources Statewide

Largest Stationary Sources of PM_{10} Statewide

Air Basin	Facility Name	City	PM_{10} (tons/year)
Mojave Desert	Southdown (Cement)	Apple Valley	931
Mountain Counties	Ampine (Wood Products)	Martell	680
Mojave Desert	North American Chemical	Trona	535
South Coast	Chevron USA Inc.	El Segundo	518
South Coast	Arco Products Co.	Carson	484
Mojave Desert	Mitsubishi Cement	Lucerne Valley	472
San Joaquin Valley	Port of Stockton	Stockton	463
Mojave Desert	U.S. Borax	Boron	447
San Francisco Bay Area	Shell Martinez Refining Company	Martinez	446
Salton Sea	Gold Fields Co. Mesquite (Mining)	Brawley	379

Table 2-10

1. Facility totals are for calendar year 1995. Some facilities may have reduced or increased emissions since 1995. These changes will be reflected in subsequent almanacs.

2. The lists of facilities do not include military bases, landfills, or airports.

PM_{10} - 1997 Air Quality

PM_{10} is California's most complex air pollution problem. PM_{10} is not a single substance, but a mixture of a number of highly diverse types of particles and liquid droplets. The chemical make-up of ambient PM_{10} and the origins of the PM_{10} particles vary widely from one area to another. In addition, although there is not a definite "PM_{10} season," PM_{10} air quality does exhibit seasonal differences, and the high PM_{10} season may vary from one area to another.

Most areas of California have either 24-hour or annual PM_{10} concentrations that exceed the State standards and pose a serious health problem. Some areas exceed both standards. Several areas also exceed the national standards. The highest annual values occur in the Salton Sea and South Coast Air Basins. In contrast to the annual values, the highest 24-hour concentrations occur in the desert areas where wind-blown dust contributes to local PM_{10} problems. Particles resulting from combustion contribute to high PM_{10} in a number of urban areas. While many of the control programs implemented for ozone will also reduce PM_{10}, more controls specifically for PM_{10} will be needed to reach attainment.

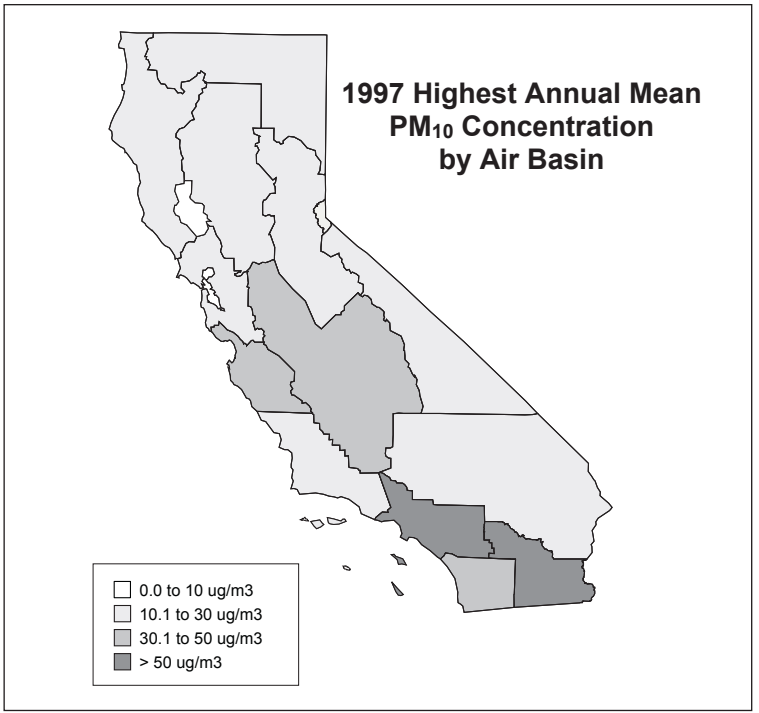

Figure 2-4

PM_{10} – 1997 Air Quality Tables

Maximum Annual Geometric Mean Concentration by Air Basin

Air Basin	1997 Maximum Annual Geometric Mean in Micrograms/Cubic Meter
Great Basin Valleys Air Basin	21.0
Lake County Air Basin	7.7
Lake Tahoe Air Basin	19.6
Mojave Desert Air Basin	27.4
Mountain Counties Air Basin	27.4
North Central Coast Air Basin	31.7
North Coast Air Basin	20.7
Northeast Plateau Air Basin	10.8
Sacramento Valley Air Basin	25.3
Salton Sea Air Basin	76.9
San Diego Air Basin	41.9
San Francisco Bay Area Air Basin	23.7
San Joaquin Valley Air Basin	43.1
South Cental Coast Air Basin	28.4
South Coast Air Basin	56.3

Table 2-11

State Annual Geometric Mean = 30 micrograms/cubic meter, not to be exceeded.

Table 2-12

High PM_{10} Concentration Sites in Each Air Basin

Great Basin Valleys
- Keeler – Cerro Gordo Road
- Mammoth Lakes – Gateway HC
- Lone Pine – E Locust Street

Lake County
- Lakeport – Lakeport Blvd

Lake Tahoe
- South Lake Tahoe – Sandy Way

Mountain Counties
- Truckee – Fire Station
- Loyalton – W 3rd Street
- Yosemite Village – Visitor Center

Mojave Desert
- Hesperia – Olive Street
- Barstow
- Mojave – 923 Poole Street
- Twentynine Palms – Adobe Road #2

North Central Coast
- Davenport
- Salinas – Natividad Road #2

North Coast
- Fort Bragg – N Franklin Street
- Eureka – Health Dept 6th and I Street
- Crescent City – 9th and H Street
- Willits – Firehouse

Northeast Plateau
- Mt Shasta – N Old Stage Road

Sacramento Valley
- Yuba City – Almond Street
- Woodland – Sutter Street
- Colusa – Sunrise Blvd
- West Sacramento – 15th Street
- Chico – Manzanita Avenue

Salton Sea
- Calexico – East
- Calexico – Ethel Street
- Winterhaven – 2nd Avenue
- Indio – Jackson Street
- Brawley – Main Street

San Diego
- Otay Mesa – Paseo International
- San Diego – 12th Avenue
- Chula Vista
- Escondido – E Valley Parkway
- El Cajon – Redwood Avenue

San Francisco Bay Area
- San Jose – 4th Street
- San Francisco – Arkansas Street
- Redwood City
- Livermore – Old 1st Street
- Fremont – Chapel Way

San Joaquin Valley
- Bakersfield – Golden State Highway
- Corcoran – Patterson Avenue
- Fresno – Drummond Street
- Hanford – S Irwin Street
- Corcoran – Van Dorsten Avenue

South Central Coast
- Santa Barbara – W Carillo Street
- Exxon Site 10 – UCSB West Campus
- Point Conception – Lighthouse
- Santa Maria – Library
- El Capitan Beach

South Coast
- Riverside – Rubidoux
- Fontana – Arrow Highway
- San Bernardino – 4th Street
- Ontario – Airport
- Norco – Norconian

Sites with the highest PM_{10} values, listed in descending order of their annual geometric mean concentration. The annual geometric mean at each site may not exceed the standard. For air basins with five of fewer sites, all sites are listed.

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Carbon Monoxide

1995 Statewide Emissions Inventory – Carbon Monoxide by Category

Carbon monoxide (CO) gas is formed as the result of incomplete combustion of fuels and waste materials such as gasoline, diesel fuel, wood, and agricultural debris. Mobile sources generate over 80 percent of the statewide CO emissions. Diesel-powered, on-road vehicles are small CO contributors. Stationary and area-wide sources of CO are the same types of fuel combustion sources that also generate NO_x. The stationary source contribution to statewide CO is small, due in part to widespread use of natural gas as a fuel and the presence of combustion controls.

CO Emissions (annual average)		
Emissions Source	tons/day	Percent
Stationary Sources	348	2%
Area-wide Sources	2529	12%
On-Road Mobile	15461	73%
Gasoline Vehicles	15152	72%
Diesel Vehicles	310	1%
Other Mobile Sources	2795	13%
Total Statewide	**21133**	**100%**

Table 2-13

Largest Stationary Sources Statewide

Largest Stationary Sources of CO Statewide

Air Basin	Facility Name	City	**CO** (tons/year)
San Francisco Bay Area	E I Dupont De Nemours & Company	Martinez	9165
Mountain Counties	Sierra-Pacific Industries (Wood Products)	Camino	2564
San Francisco Bay Area	Kaiser Cement Corporation	Richmond	2341
Mountain Counties	Sierra-Pacific Industries (Wood Products)	Quincy	2293
Sacramento Valley	Calaveras Cement Company	Redding	2187
Northeast Plateau	Sierra-Pacific Industries (Wood Products)	Susanville	1939
South Coast	Chevron USA Inc.	El Segundo	1793
North Central Coast	Lone Star Industrial Cement Plant	Davenport	1760
North Central Coast	P G & E	Moss Landing	1619
Sacramento Valley	Pacific Oroville Power, Inc.	Oroville	1365

Table 2-14

1. Facility totals are for calendar year 1995. Some facilities may have reduced or increased emissions since 1995. These changes will be reflected in subsequent almanacs.

2. The lists of facilities do not include military bases, landfills, or airports.

Carbon Monoxide – 1997 Air Quality

The State and national carbon monoxide standards are now attained in most areas of California. The requirements for cleaner vehicles and fuels have been primarily responsible for the reductions in CO, despite significant increases in population and the number of vehicle miles traveled each day. However, there are still two problem areas: a limited portion of Los Angeles County and the city of Calexico in Imperial County. Based on projected emissions, the South Coast Air Quality Management District predicts Los Angeles County will attain the national CO standards sometime after the year 2000. The CO problem in Calexico is unique in that this area shares a border with Mexico, and there is a high likelihood that cross-border traffic contributes to the local CO problem. More study is needed to determine the most effective control strategy for this area.

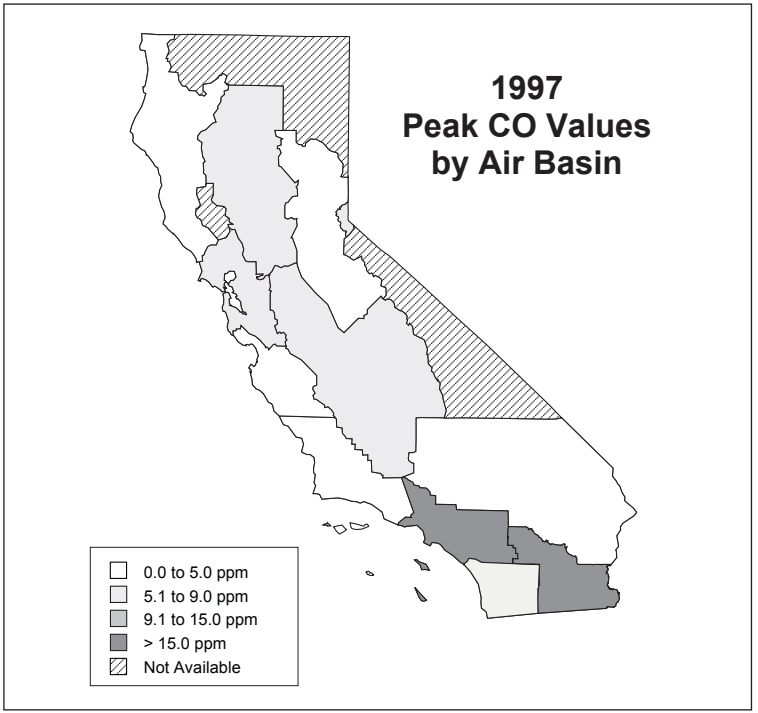

Figure 2-5

Carbon Monoxide – 1997 Air Quality Tables

Maximum Peak 8-Hour Indicator by Air Basin

Air Basin	1997 Maximum Peak 8-Hour Indicator in Parts per Million	Number of Days in 1997 Above State Standard	Number of Days in 1997 Above National Standard
Great Basin Valleys Air Basin	Incomplete Data	0	0
Lake County Air Basin	Incomplete Data	Incomplete Data	Incomplete Data
Lake Tahoe Air Basin	5.6	0	0
Mojave Desert Air Basin	4.8	0	0
Mountain Counties Air Basin	2.4	0	0
North Central Coast Air Basin	1.9	0	0
North Coast Air Basin	3.3	0	0
Northeast Plateau Air Basin	Incomplete Data	Incomplete Data	Incomplete Data
Sacramento Valley Air Basin	7.7	0	0
Salton Sea Air Basin	17.5	13	10
San Diego Air Basin	6.3	0	0
San Francisco Bay Area Air Basin	6.5	0	0
San Joaquin Valley Air Basin	9.0	0	0
South Central Coast Air Basin	5.0	0	0
South Coast Air Basin	15.5	16	12

Table 2-15

Table 2-16

High Carbon Monoxide Concentration Sites in Each Air Basin

Great Basin Valleys
- Mammoth Lakes – Gateway HC

Lake Tahoe
- South Lake Tahoe – Stateline

Mountain Counties
- Sonora – Barretta Street
- Jackson – Clinton Road

Mojave Desert
- Lancaster – W Pondera Street
- Victorville – Armagosa Road
- Hesperia – Olive Street

North Central Coast
- Salinas – Natividad Road #2

North Coast
- Ukiah – E Gobbi Street

Sacramento Valley
- Sacramento – El Camino and Watt
- Sacramento – T Street
- Sacramento – Del Paso Manor
- Chico – Salem Street

Salton Sea
- Calexico – Ethel Street
- Calexico – East
- El Centro – 9th Street

San Diego
- Escondido – E Valley Parkway
- San Diego – Union Street
- San Diego – 12th Avenue

San Francisco Bay Area
- San Jose – 4th Street
- Vallejo – 304 Tuolumne Street
- San Francisco – Ellis Street
- Oakland – Alice Street

San Joaquin Valley
- Fresno – Fisher Street
- Fresno – 1st Street
- Stockton – Claremont
- Modesto – 14th Street

South Central Coast
- Santa Barbara – W Carillo Street
- Simi Valley – Cochran Street

South Coast
- Lynwood
- Hawthorne
- Burbank – W Palm Avenue
- Reseda
- Los Angeles – North Main Street

Sites with the highest CO values, listed in descending order of their peak 8-hour indicator value. The peak value at each site may not exceed the standard. For air basins with five of fewer sites, all sites are listed.